

# Greatest Electrified Railroad

## Completion of Coast Division Makes the St. Paul Railway a World Marvel

WITH the opening recently of the coast division of the Chicago, Milwaukee and St. Paul Railway between Othello, Wash., and Seattle, what is generally acknowledged to be one of the greatest electrical engineering tasks in American railroad annals was brought to a conclusion after five years of constant planning and at an expenditure of \$20,000,000.

The United States thus becomes the unquestioned possessor of the longest electrified railroad in the world—approximately 700 miles of main line track, or the distance between New York and Cleveland, Ohio. To this must be added about 200 miles of extra track, bringing the total mileage up to about 900 miles, or nearly the distance from New York to Chicago.

The complete electrification now extends from Harlowton, Mont., to the Pacific Coast, crossing on its way two mighty mountain ranges, the Rockies and the Cascades, with the exception of about 200 miles still to be electrified between Avery, Idaho, and Othello.

### Electrification of First Division.

The electrification of the first division began in 1914 and was placed in operation in December of the following year, covering a distance of 440 miles across the Great Divide and the Rocky Mountains. The success of this undertaking was so pleasing to the officials of the road that in 1917 it was decided to electrify the Coast division, now known as the Othello, Tacoma, Seattle electric zone.

This vast electric transportation system in its completed form operates sixty-one electric locomotives, including passenger, freight and switching locomotives. These locomotives have replaced for service elsewhere no less than 152 steam engines, at an annual saving in coal of 300,000 tons and of 40,000,000 gallons of oil, for the railroad obtains its motive power wholly from the natural water resources of the surrounding country.

Fifteen hydroelectric power stations make available a combined electric horse power of 410,000, of which the new division can use 150,000 horse power. This hydraulically generated current is distributed to the road through eight sub-stations at different points along the line, and is in addition supplemented by a 100,000 volt transmission line paralleling the tracks.

### Equipment of New Division.

Electric rolling stock and equipment for the new division consists primarily of five 3,000 volt direct current locomotives, one of which recently astonished the railroad world by winning a tug-of-war with two steam engines at the works of the General Electric Company at Erie, Pa. These locomotives, which are the most powerful type of electric passenger locomotives yet developed, are being used in passenger service to haul the "Olympian" and "Columbian," the crack flyers traveling between Chicago and the west coast.

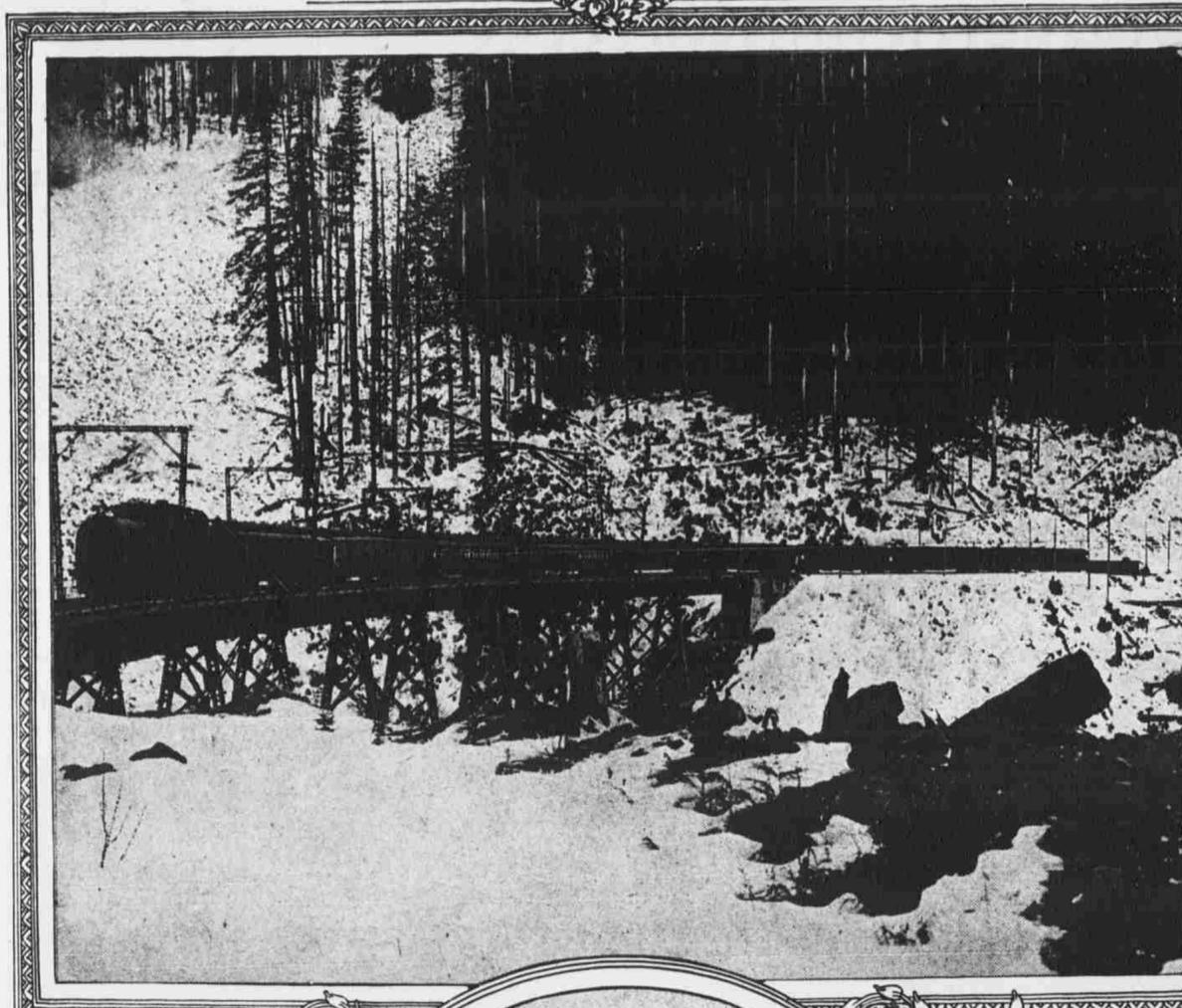
The most interesting feature of the new division is a remarkable two and a quarter mile tunnel through the solid rock of a mountain side at Snoqualmie Pass, in the heart of the Cascade Range. Heavy grades have been unavoidable at many points along the line. In one place a two per cent. grade extends over a distance of twenty miles, or a steady upward pull of 105 feet for every mile progressed. Yet the powerful electric takes these grades and others almost as bad as a twenty mile an hour clip, hauling a ten car passenger train, while on level stretches they make up time at the rate of sixty miles an hour.

Traffic on the new road consists of three passenger trains and an average of from five to six freight trains in each direction daily.

### Reaches 6,322 Feet Above Sea.

As illustrating the heights to which the electric locomotives must climb it is interesting to note that the highest point on the road is 6,322 feet above sea level.

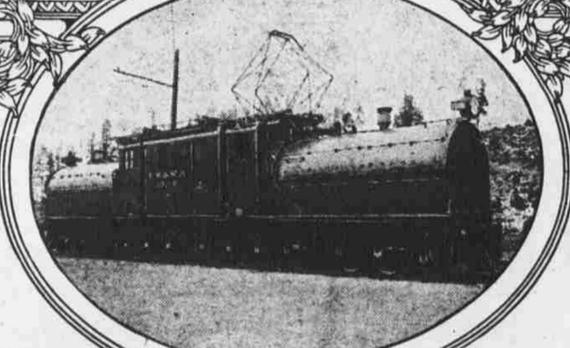
The economic features characterizing electric operation on the St. Paul with its new division now opened and the saving effected



TRAIN HAULED BY NEW GEARLESS ELECTRIC LOCOMOTIVE OVER CASCADE RANGE, C. M. & ST. P.

over the former steam operation are emphasized by figures announced by A. H. Armstrong, chairman of the electrification committee of the General Electric Company, which engineers and many railroad men state points the way to the electrification of other American roads now that the transportation systems have been returned to private ownership.

According to these figures electric operation has affected a reduction of 22 1/4 per cent. in the number of trains, 24 1/2 per cent. in average time per train, and has improved operating conditions so that nearly 30 per cent. more tonnage can be handled by electric operation in 80 per cent. of the time it formerly took to handle the lesser tonnage by steam engine. The capacity of the line has, in other words, been increased about 50 per cent.



ONE OF THE FIVE ST. PAUL ROAD'S 3000 VOLT GEARLESS LOCOMOTIVES

## Home Gardens Important Now as in War Time

Continued from Preceding Page.

head or premium flat Dutch thinly in short rows. As soon as the seedlings make the third pair of leaves they may be lifted and set in their permanent location, wherever there happens to be space in the garden, placing plants at least two feet apart each way. Where the white butterfly troubles the plants or the green cabbage worm develops use slug shot or arsenate of lead to fight these pests, and do it early in the season, because the longer it is delayed the more troublesome they will become.

### Roots to Grow for Winter Use.

Second only in importance to the vegetables described heretofore are those of which we eat the roots and which, because of their nature, may be stored and kept during the fall and winter months. Perhaps it is well to think of beets, carrots, onions, parsnips, kohlrabi, radishes and turnips as the winter staples which help to fortify us against the long winter months when greens of all kinds are scarce and expensive. Of course all these vegetables are good in the young stage as well, especially the radishes and beets, which may be enjoyed from early June until practically spring of the following year if the proper varieties are sown and a succession is provided.

To grow delicious, crisp radishes throughout the year let me state that the earliest radishes may be sown as soon as the soil can be put in good gardening condition. Select extra early round and olive shaped sorts for this first crop, choosing Scarlet Turnip White Tip, Scarlet Globe, Rosy Gem, Scarlet Button, French Breakfast and other similar varieties.

Later in April or early in May sow the long varieties like Icicle and Chertiers, which stand heat better. Still later, around July 1, sow the summer and winter varieties, which have a very much thicker skin, resist heat well and, in the case of winter radishes, may be kept throughout the winter until the end of February or even later. The best summer and winter radishes are long white Vienna, white Stuttgart, round and long black Spanish and white Chinese or Celestial. The secret of having radishes that are always just right is to sow short rows often rather than to have one big patch at one time.

### Beets and Carrots.

The finest beets are those that are grown quickly and used just about the time they reach two inches in diameter. What has been said about radishes holds good in the case of beets as well—sow them frequently rather than sow a great mass at once. The best all around beet for the home garden is Detroit dark red, with Crosby's Egyptian competing in popular favor as a close second. Both these varieties may be sown up to the middle of July and the latest sowings will produce the roots that will keep best, buried in sand or soil in the cellar, for winter use.

Carrots are treated in a very much similar fashion, excepting that they require a longer season during which to reach full size, and the larger, longer varieties. Like half long pointed roots and Danvers like long, will prove the best for winter keeping. For an

extra early supply of carrots sow Chantenay or Model. For a still earlier variety, French Forcing, Oxheart and Amsterdam Forcing are ready within forty-five to fifty days from date of sowing, but, of course, it must not be expected that these carrots will grow to as large size as the later and better keeping varieties.

### Onions in Great Variety.

Onions give the home gardener the greatest variety of choice. Generally speaking the white ones are the mildest, the yellow the most popular and the red ones the strongest and also the best keepers. The home gardener generally starts with onion sets which may be planted out as early in the spring as the ground can be dug. However, it is comparatively easy, where one has good rich soil, to grow large onions from seeds during one season, if one does not mind the job of repeated hand weeding and thinning out of the seedlings.

Onions must have rich soil since the plants have a very limited root system, and they must develop rapidly and steadily. Any check in their development will cause the tops to die, which, of course, means the end of development. The best white sort for the home gardener is unquestionably White Silverskin or Portugal. A later white onion is Southport White Globe. The most widely grown and recognized general utility onion of America is Yellow Globe Danvers, and if a larger, milder onion is wanted, which, however, does not keep well, try a row or two of Prizebreaker.

Among the red onions Southport Red Globe is the handsomest, heaviest yielding and best keeping variety, although Australian Brown, a smaller variety, competes for the title of being the best keeper, since bulbs have been known to keep from fall of one year until summer of the following year.

Comparatively few people care for parsnips, although they are a most wholesome vegetable. However, no plans should be made to grow them where the soil is stony or heavy. This applies pretty near to all the root crops. They must have a deep rich soil or the roots are inclined to be branched or forked. Hollow Crown parsnip is the best known, although a newer variety with whiter skin is rapidly rising in popular favor. This is called Lisbonais.

A turnip rooted form of cabbage called kohlrabi deserves more general cultivation. It is as easily grown as radishes or beets and is of very delicate cabbage flavor. The edible part forms above the ground and should be used while measuring about two inches in diameter. Two forms are the most widely known and grown, Early White Vienna and Early Purple Vienna. Both are ready for use within sixty days after seeds are sown.

Both turnips and their later maturing brothers, called rutabagas, are almost too popular to deserve description. They are generally sown around July in places where early crops have been gathered or the seeds may even be broadcasted in the corn patch after that has been given the last cultivation.

The earliest turnips are, of course, the sweetest, and if they are gathered promptly they may even be sown in early spring. However, all spring sown turnips will grow

tough and bitter as soon as the weather gets hot, hence the advice to make the principal planting during July, which will throw the developing period into the cool fall months. Purple top white Globe and purple top Strap Leaf are the two most popular early turnips, while American purple top Rutabaga and Golden Ball are valued as choice rutabagas by those who believe in storing this vegetable for winter use.

### Green Roughage.

If heretofore we have considered only the solid foods which the body needs, let us now turn to the greens which one sages has described as the "broom of the stomach." We shall need green stuff to keep the system in good running order and there really are no greater delicacies than endive, properly prepared lettuce, well cooked spinach or greens of all kinds. All these vegetables are early spring crops with the exception of kale, which is treated very much like turnips and sown in late summer or fall, for fall and early spring use. Dwarf green or tall curled Scotch are the two most popular varieties.

Those who are fond of greens and want them throughout the summer will make no mistake in trying a fifteen or twenty-five foot row of Swiss chard. This is really a beet which does not form roots but only tops. These tops should be gathered regularly and cooked just like beet tops. They develop a very delicate flavor all their own. If care is taken while gathering to avoid injuring the heart of the plant, this comes pretty near being a form of perpetual spinach.

Everybody knows spinach, but there is one particular type that deserves more attention on the part of those who are fond of greens and that is called New Zealand. It is really a plant of spreading character, a well developed specimen frequently covering a space size 4 by 5 feet. The leaf tips only are used, but they are produced in such tremendous quantities on a well developed plant that a half dozen plants will supply a peck of spinach a week from the middle of July until frost destroys the plant. New Zealand spinach loves hot weather and seeds should not be sown until the ground becomes warm.

### Lettuce Easy to Raise.

Who does not love lettuce? Lettuce is one of the easiest vegetables to grow and yet fewer people succeed in growing this crop to perfection than with any other vegetable. Success in growing lettuce depends entirely on proper thinning out of the seedlings when they begin to crowd each other in the row and on the correct selection of the varieties for the different seasons.

Early in the season sow the loose leaf and early Butterhead varieties. Early in May follow with the later Butterhead and Cisphead varieties. Early in June sow first Crisphead and Cos lettuces.

Black Seeded Simpson is the universal favorite among the loose leaf lettuces. Way-ahead and Allheart are the two choicest early Butterhead varieties. Among the mid-season Butterheads, Mammoth Black Seeded Butter and All Seasons surpass in heat resistance. The Crispheads such as Iceberg, Hanson and New York or Wonder-

### The Beetle That Cultivate

ANTS are not the only insects that practice the cultivation of mushrooms, although for a long time it was thought that they were the only creatures of a lower order than man that possessed the intelligence to follow such an agricultural pursuit. Bouverie, the entomologist, had found that a certain wood boring beetle, known as the bostrychide, is as familiar with mushroom cultivation as is the species of ant of which so much has been written.

Professor Bouverie discovered that the beetles in question bore holes in wood and half fill them with a prepared fungus which makes an ideal mushroom bed. The garden is carefully spawned and in course of time the mushrooms appear. In this way the beetle provides itself with a food sufficiently tender for its feeble jaws.

But in the present theatrical prosperity Wall Street is no longer looked upon as the only source of such contributions. It is necessary no longer to go down to the financial district for these contributions, although only last week a group of young brokers and bankers floated a comedy seen at a Broadway theatre. But nowadays the money comes from every side.

One of the new impresarios who made his appearance on the list of producers last winter, for instance, came from an unusual place of preparation for theatrical management. Various more or less submerged regions have sent representatives to the management of important New York theatres, but it is freely admitted that some of the present supply are coming from more and more uncommon milieus. This particular arrival, who made his bow with a really elaborate and beautiful production of a musical play, used to rent out dress suits to the residents of the lower East Side who were so infrequently catalogued as among those present that the permanent possession of such festive garments seemed to tie up unnecessarily capital that might be more active elsewhere. What was the use of paying out good money when it was impossible that there should be in a lifetime more than a limited number of marriages and betrothals?

This eminently practical enterprise prospered. And this favorable progress continued even after its proprietor diverted his interests into a somewhat artistic channel. He began to clothe the suppers of the Yiddish theatres on the lower downtown streets for the fashionable dramas of social life in the ghetto in which they appeared. As the standard of *miser-en-scene* was elevated to attain approximately the Broadway standard evening dress became a part of the realism as well as the decorative beauty of the tableaux. Subsequently a more tender bond united this enterprising customer by marriage to a manager of one of the Yiddish theatres. He progressed in his profession until last winter he was able to control sufficient capital to be proprietor, with his partners, of one of the most successful and artistic musical shows of the season.

### Ticket Speculators Aroused.

It was last summer that the artistic conscience of the ticket speculators was awakened. Their business instinct is always sufficiently acute. It has more than once led them into bitter conflicts with the police power of the State, but as they inevitably issue in triumph the setback to their professional enthusiasm is but temporary. They decided that after having for so many years been bullied by the successful theatre managers of the city that they would become managers themselves and take as many tickets as they wanted for the price they thought just.

It happened that there was a musical show just then impending. It was full of ideas, funny jokes, beautiful women and comedians. But it was shy on funds. So the speculators came to the rescue in the role of managers.

So the ticket men have another show of their own this year. And they are going to have still another. The first one has been a great success. In these days of almost no failures in musical shows there is every reason to believe that the second experiment this summer will be prosperous. So the ticket speculator as a producing factor in the theatre may be permanent.

But the most novel syndicate to operate in the theatre field has just put its first effort before the public. It comprises the well known headwaiters and a cabaret manager along upper Broadway. A dancing teacher who had successfully arranged several cabaret entertainments tried his hand at producing and with success. The waiters and managers of the cabaret heard of his profits on a modest outlay. So they decided it might be a good idea to go into theatrical management. No sooner had they come to this conclusion than it was carried along Broadway on one of its communicating breezes.

It was soon snuffed by the man with a show but no capital. The result was shown recently at a Broadway theatre and the prognostications are that the headwaiters will soon be in the capitalistic class with the ticket speculators. This does commerce ever come to the aid of art.

# Theatrical 'Angels' on Every Side

## Prosperity of Last Two Years Makes It Easier Than Ever to Get Financial Backing

SO great has been the public support of the theatres during the last two years that managers have found little trouble in obtaining financial backing for their projects. Indeed, outside money, as it is called, has come liberally to the support of various theatre enterprises. It happens every once in while that such an undertaking "flops" long before a chance to get the money back has been reached. But there is less danger of that tragedy nowadays than there used to be. The public apparently runs to see any play, especially if it be supplied with music.

Joe Lebling's cut rate ticket offices make it easy to sell seats in theatres during the early nights of the week even if the play is not one of the most attractive. Even the best of the plays draw such large audiences on Friday and at the two Saturday performances that they are able to count on the rest of the week as "velvet." So a moderate success may draw at these week end representations enough to pay its expenses. The casual profits that may come in at other times help to carry the enterprise along until a tour on the road may reap the harvest of the metropolitan run.

### "Angels" Always at Hand.

The theatre has always invited capital from sources that could not be induced to give for other kinds of speculative investment. It is said of course that one of them is born every minute. A more than fair share of these angels are diverted toward the theatre. This tendency is nothing new. Investors have often been easy to persuade to put their money into a syndicate for producing a play when more certain speculations would not in the least appeal to them.

It is not always business that draws them into such combines. It may not always be art alone. It may even be the heart at times. Or it may be the desire to encourage some budding genius—of course more frequently a genius of the feminine gender, with beauty as well as talent—that leads Wall Street to put its money into floating a play or an operetta.

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